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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, EDITH M

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 01/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/936,153	<b>Applicant(s)</b> IKEDA ET AL.	
	<b>Examiner</b> Edith M Chang	<b>Art Unit</b> 2637.	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>090701</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The references of AU and AV listed in the information disclosure statement filed September 7, 2001 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Specification***

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

The abstract is not in the limited range, rewrite the abstract within the range of 50 to 150 words or under the 15 lines in one paragraph.

3. For the formality of the application under the present office practice, applicant(s) is required to replace "Claims" with "I or We Claim", "The Invention Claimed Is" (or the equivalent) before the Claims part of the specification of the instant application. See MPEP 608.01(m).

Appropriate correction is required.

*Drawings*

4. Figures 1, 5 and 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because the Figures 5 and 6 include the numerals not mentioned in the description of the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

In Page 13, line 3, "control circuit 20" and line 21, "multiplexing circuit 1" are not shown in the Figure

In line 20 page 36 of the written description of FIG.4, an error flag  $S_{EF}$  is not shown in the FIG.4.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

7. Claims 1-17 are objected to because of the following informalities:

Claim 1, line 3: "a random sequence" is suggested changing to "a pseudo-random binary sequence"; line 10: "received signal" is suggested changing to "received broadcast signal"; line 12: "a PRBS" is suggested changing to "the PRBS"; line 20: "sub" is suggested changing to "demultiplexed sub".

Claim 7, line 12: "received signal" is suggested changing to "received broadcast signal"; line 14: "a" is suggested changing to "the".

Claim 15, line 3: "a" is suggested changing to "the broadcast".

Claim 17, line 2: "received signal" is suggested changing to "received broadcast signal";  
line 3: "a frequency" is suggested changing to "the frequency of the broadcast channel".

Claims 2-6, 14, 16, and 8-13 are dependent on the objected claims 1 and 7.

Appropriate corrections are required.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 6-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6, lines 5 & 7: "the sub channel number" lacks antecedent basis; and line 5: "the broadcasting side" lacks antecedent basis.

Claim 7, lines 17-18: "said deinterleaved signal" lacks antecedent basis.

Claim 8, lines 3-4: "the transmission side" lacks antecedent basis; line 8: "the received broadcast channel" " lacks antecedent basis.

Claim 9, lines 3 & 12: "the PRBS" lacks antecedent basis; line 5: "the sub channel number" and "the transmission side" lack antecedent bases; and line 9: "the sub channel number" lacks antecedent basis.

Claim 12, line 8: "said PRBS" lacks antecedent basis.

Claim 13, line 7-8: "said pseudo random sequence" lacks antecedent basis.

Claim 14, line 3: "said error correction" and lines 3-4: "the state of the received signal" lack antecedent bases.

Claim 15, lines 2-3: "a channel selection control circuit" further comprised is not described in the specification or shown in the closures of the drawing.

Claim 17, line 5: "the sub channel number" lacks antecedent basis.

Claims 10, 11 and 16 are directly or indirectly dependent on rejected claims 7 and 14.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 7 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Park et al.  
(US 6,470,030 B1).

To claim 7, Park teaches an OFDM receiver for digital broadcasting system in the FIG. 1 and column 1 lines 33-34.

In FIG. 1, the receiver comprises the pilot signal decoding section 700 (the demultiplexing circuit) demultiplexing the transmitted data (the main signal) and SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-55) of the OFDM signal received from tuner through A/D (500), and rotator (510) (column 3 lines 57-63),

The equalizing and deinterleaving section (600) deinterleaving the demultiplexed data from the section 700 using the parameter (REF, SPC of FIG.13), the FIG.13 is the detail input/output flow of the equalizing and deinterleaving section (600), and

The FEC DECODER of FIG.1 to decode the deinterleaved signal from the FPGA#2 the equalizing and deinterleaving section (600).

**To claim 8**, in FIG.13 and column 1 lines 40-55, Park teaches the parameter SPC is set according to the broadcasting channel for the SPC, and

Further a control circuit (640) for setting the parameter in the equalizing and deinterleaving section (600).

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-4, 6-12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Park et al. (US 6,470,030 B1) in view of Kleider et al. (US 6,487,252 B1).

**To claims 1 & 9**, Park teaches an OFDM receiver for digital broadcasting system in the FIG.1 and column 1 lines 33-34.

In FIG.1, the receiver comprises the pilot signal decoding section 700 demultiplexing the transmitted data (the main signal) and SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-



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55) of the OFDM signal received from tuner through A/D (500), and rotator (510) (column 3 lines 57-63);

The FFT processor 710 with the rearrangement memory 720 initialized/supplied by table rearranging section accordingly to (730 of FIG.3) reproduce the sub signals (column 3 lines 59-63);

The controller (570) for controlling reproduction of the transmitted data (the main signal); and

The decoder (FEC DECODER of FIG.1) for decoding the transmitted data (column 3 lines 39-42).

However, Park does not explicitly specify the pseudo-random binary sequence (PRBS) generator in the pilot signal decoding section. Kleider teaches the circuit in FIG.3, element 33 is the PRBS generator generating the PN code sequence used by elements 34 and 35 to produce the sub signals (column 4 lines 34-37 & lines 45-50) according to the pilot sequence procedure 100 of FIG.2 wherein the PN code sequence is the PRBS (column 3 lines 37-45). As Park having the pilot detecting section with the table rearranging section and rearrangement memory to reproduce the data and sub signals, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the PRBS generator taught by Kleider in Park's pilot signal decoding section to provide the reference signals/data to the table arrangement section for decoding the pilots in order to provide an accurate, efficient, and robust system of synchronization suitable for wireless reception (column 2 lines 7-15).

**To claims 2 & 10**, Park teaches the OFDM broadcast signal (column 1 lines 33-34) with transmitted data (the main signal) and SPC (scattered pilot cells), CPC (continual pilot carriers),

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and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-45).

**To claims 3 & 11**, since the DVB (column 1 lines 33-35) and DAB (digital audio broadcasting) both standards choose OFDM scheme, hence Park's receiver receiving the sound data in the transmitted OFDM signals.

**To claims 4 & 12** Park teaches the SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) pilot signals contained in the sub signals in the frames (column 1 lines 40-45) of the OFDM signal received from tuner through A/D (500), and rotator (510) (column 3 lines 57-63); and

In FIG.13, the equalizer (640) of the equalizing and deinterleaving section (600) for correcting the distortion/interference in the data according to the pilot signal (SPC).

**To claim 6**, In FIG.1, Park teaches the receiver comprises the pilot signal decoding section 700 decoding the SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-45) of the OFDM signal received according to the sub channel numbers assigned to the pilot/sub signals (column 1 lines 40-55).

**To claim 14**, in FIG.1, Park teaches the FEC decoder, and it is well known in the art that the forward error correction decoder provides the error signal when the received signal is not correct.

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14. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 6,470,030 B1) in view of Kleider et al. (US 6,487,252 B1) as applied to claim 1 above, and further in view of Mitsubori et al. (JP 11-145929-A).

To claims 5 & 13, the modified/combined Park et al.'s receiver with Kleider et al.'s PRBS generator does not list the transmission control signal included the OFDM frame, however Mitsubori et al. teaches the transmission control signal in their OFDM transmitting system ([0001]). As Park et al.'s receiver with the pilot/reference signal decoding section providing the ability to decode the transmission control signal (another reference signal as the pilot signals) in the OFDM frame taught by Mitsubori et al., at the time of the invention, it would have been obvious to a person of ordinary skill in the art to receive the transmission control signal to have the information regarding the transmission such as the content of a modulation of each subcarrier, an interleave configuration, etc. for the purpose of obtaining the frame synchronization of a signal recovery (as stated in sections [0011] & [0012]).

***Allowable Subject Matter***

15. Claims 15-17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a digital broadcast receiving apparatus as a whole, the combination of elements and features, which includes a control circuit selecting or changing the broadcast channel to

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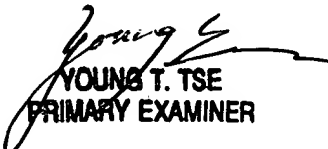
receive the signal based on the error signal from the decoder or based on the sub channel number of the overlapped channel as recited in the claims.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang  
January 14, 2005

  
YOUNG T. TSE  
PRIMARY EXAMINER